Homework 4

CMSY-199, Spring 2012

The source code and sample output for this assignment must be submitted electronically using the Canvas course website on or before 6 pm on Monday, April 2.

1. Add the following member variables to the `Complex` class (Fig. L 8.7) after completing Lab Exercise 3 from chapter 8.

Field	**Summary**
`I`	The complex number (0,1)
`ONE`	The complex number (1,0)
`ZERO`	The complex number (0,0)

2. Add *set* and *get* methods for the member variables `real` and `imaginary`.

3. Add the following methods to the `Complex` class.

Method Name	**Return Type**	**Description**
`abs`	`double`	Return the absolute value of a Complex number (aka, modulus or magnitude)
`arg`	`double`	Return the argument of a Complex number (aka, phase or angle)
`conjugate`	`Complex`	Return the complex conjugate of a Complex number
`divide`	`Complex`	Divide two Complex numbers
`equals`	`boolean`	Returns true if the real and imaginary parts of obj and `this` are equal
`fromPolar`	`Complex`	Create a Complex number from polar form
`multiply`	`Complex`	Multiply two Complex numbers
`toPolarString`	`String`	Return String representation of a Complex number in Polar Form

4. Modify the `ComplexTest` class (Fig. L 8.8) to test all of the new members in the `Complex` class.